Bank Assignment

Due: Monday June 4th at 5 pm

Console application:

Database:

* **USER** table
  + USER\_ID (PK) 🡪 USE SEQUENCE TO GENERATE
  + USER\_FNAME
  + USER\_LNAME
  + USER\_PASWD
    - Add encrypt or hash feature.
  + USER\_DOB
  + USER\_TYPE\_ID
  + USER\_CREATED\_DATE
* **USER\_TYPE** table – Lookup table - Only 2 types
  + USER\_TYPE\_ID
    - 1
    - 2
  + USER\_TYPE
    - “SUPERUSER”
    - “CUSTOMER”
* **BANKACCOUNT** table
  + BANK\_ACCOUNT\_ID (PK)
  + USER\_ID (FK)
    - A user can have multiple accounts.
  + BANK\_ACCOUNT\_BALANCE
    - This gets updated when user deposits, withdraws, transfer to and transfers from account.
  + BANK\_ACCOUNT\_CREATED\_DATE
  + BANK\_ACCOUNT\_STATUS\_ID
* **BANK\_ACCOUNT\_STATUS** table – Lookup table - Only 2 types
  + BANK\_ACCOUNT\_STATUS\_ID
    - 1
    - 2
  + BANK\_ACCONT\_STATUS
    - Open
    - Closed

BONUS:

* **TRANSACTION** table
  + TRANSACTION\_ID (PK) 🡪 USE SEQUENCE TO GENERATE
  + USER\_ID (FK)
    - A user can have many transactions.
  + TRANSACTION\_TYPE\_ID (FK)
  + TRANSACTION\_AMOUNT
  + TRANSACTION\_DATE
* **TRANSACTIONTYPE** table 🡪 Lookup table
  + TRANSACTION\_TYPE\_ID – ONLY 2 types
    - 1
    - 2
    - 3
  + TRANSACTION\_TYPE
    - “DEPOSIT”
    - “WITHDRAW”
    - “TRANSFER”
* **SEQUENCE:** Generate USER\_ID to increment
* **SEQUENCE:** Generate BANK\_ACCOUNT\_ID to increment
* **SEQUENCE:** Generated TRANSACTION\_ID to increment

A registered user can login with their username and password

An unregistered user can register by creating a username and password

A superuser can view, create, update, and delete all users.

A user can view their own existing accounts and balances.

A user can create an account.

A user can delete an account if it is empty.

A user can add to or withdraw from an account.

A user can execute multiple deposits or withdrawals in a session.

A user can logout.

* **TOP\_MENU**
  + Type “EXIT” to exit program.
  + **REGISTER\_MENU**
    - Type “RETURN” to return to the top menu option.
    - Username:
    - Password:
    - First Name:
    - Last Name:
    - DOB:
      * Then check if username exists in database.
        + If username exists, then keep prompting for new username and checking. WRONG\_LOGIN\_EXCEPTION

Unless they type “RETURN”, then return to TOP\_MENU.

* + - * + If username does not exist:

Create new user().

User u = new User();

Create new User in database.

Send message that new user has been created and user can now log in.

Return to TOP Menu

* + **LOGIN MENU**
    - Type “RETURN” to back to TOP\_MENU.
    - Username?
    - Password?
      * **FIND USER\_ID** in USER table that has the same Username and Password.
        + **IF NOT FOUND**, print message, information is not found and ask for username and password again.
        + **IF FOUND**, using USERID: --**LOGIN\_FOUND\_MENU:**

**IF USER:**

View Accounts and Balances(USER\_ID)

Find User accounts by searching BANKACCOUNT TABLE for their BANK\_ACCOUNT\_ID using their USER\_ID.

Show only Accounts with an account status of 1 “Open”.

If account does not exist, message user that they do not have an account. NO\_ACCOUNT\_EXCEPTION

Return to LOGIN\_FOUND\_MENU:

Create An Account

Generate a new account with 0 balance.

Delete An Account If Empty

Show Accounts that are 0 balance and has account status of 1 “Open”.

Then prompt which Account# to delete.

If Database,

Deposit(depAmount, USER\_ID)

Withdraw(withAmount, USER\_ID)

Transfer(transAmount, USER\_ID)

Logout

**IF SUPERUSER:**

View Accounts And Balances of Users(USER\_ID)

Update Account(USER\_ID)

Create New User(USER\_ID)

Delete User(USER\_ID)

Logout()

Use sequences to generate USER\_ID and BANK\_ACCOUNT\_ID.

Throw custom exceptions in the event of user error (overdraft, incorrect password, etc).

Provide validation messages through the console for all user actions.

Use the DAO design pattern.

Store superuser username/password and database connection information in a properties file.

Required technologies:

PL/SQL with at least one stored procedure, JDBC with prepared and callable statements,

Scanner for user input, JUnit tests on as much of the program as possible.

Bonus:

A user's transactions are recorded.

A user may view transaction history.

Create a Maven project with your solution as JDBCBank, include it in your branch with your DB creation script (JDBCBank.sql).

Use log4J to log data transactions and use JUnit for unit testing